AIA

NASA-Industry Aerospace Forum

AEROSPACE INDUSTRIES ASSOCIATION OF AMERICA, INC.

The Aerospace Industries Association of America, Inc. is the national trade association of the manufacturers of aircraft, guided missiles, spacecraft, propulsion, navigation and guidance systems, support equipment, accessories, parts, materials and components used in the construction, operation and maintenance of these aerospace products.

The Aerospace Industries Association was created over forty years ago to serve as a vehicle for the lawful interchange of information between its member companies, and to represent those companies in their relations with their customers, Government or commercial, on matters of industry-wide interest.

Through its committees of industry experts and its staff, the Association provides a medium for collaboration on non-competitive problems common to the industries and major segments of the industries which comprise its membership.

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FOREWORD

More than 200 participants from the National Aeronautics and Space Administration and the aerospace industry attended the NASA-Industry Aerospace Forum, held June 23, 1964, in Washington, D. C., to discuss methods and techniques of solving problems and improving efficiency in ten different areas. They are:

Economic Data on Scientists and Technicians
Electronics
Facilities
Financial Management and Reporting
Logistic Support
Procurement (Incentive Contracts)
Propulsion
Subcontract Management
Technical Direction
Traffic Management

Typical of the results of this forum was the development of more meaningful data on the utilization of scientists and engineers. The results of all the forum workshops, properly followed up, should prove a strong force in achieving the mutual Government-industry goal of better, more reliable products at the lowest possible cost.

Following the workshop meetings, Karl G. Harr, Jr., President of the Aerospace Industries Association, reported: "Obviously, this was just a beginning, but I am certain we have jointly contributed to an atmosphere conducive to the strengthening of the ties between NASA and industry, and to a better understanding by each partner of those matters which tend to affect the relationship."

James E. Webb, NASA Administrator, stated: "Members of the NASA organization who attended reported that the discussions were frank and pertinent and they believe the panel discussions were exceedingly helpful in crystallizing problems and finding ways for solutions. This, of course, means there must be follow-up actions and we are prepared to see these are carried out. I believe much good for both NASA and industry will result."

The summaries of the workshops on the following pages of this report describe the accomplishments in detail.

WORKSHOP SUMMARIES

ECONOMIC DATA ON SCIENTISTS AND TECHNICIANS

PRINCIPAL ACCOMPLISHMENTS

A greater understanding by industry of the needs for and uses of data on scientists, engineers, and technicians, and NASA's need to refine its projections. Techniques of accomplishing NASA's objectives were suggested by industry for immediate implementation by NASA.

FOLLOW-ON ACTION

Develop a pattern of reporting economic data in this area so that the contractors' report can be used in a joint NASA-DOD manpower reporting system. Exploit existing data available from contractors, such as corporate "talent banks," for special analyses to provide more significant information on the unique characteristics of scientists and engineers and technicians.

ELECTRONICS

PRINCIPAL ACCOMPLISHMENTS

The candid appraisal by responsible NASA program and staff officers of present and planned electronic research programs, organization, management, and major trends and problems of management interest, was most timely and valuable. The exchange of views between NASA and industry during this formative stage of a manifold expansion of space electronics research, provided a mutual understanding of the need for improved NASA-industry communication and collaboration in achieving national electronics research and development goals.

FOLLOW-ON ACTION

Industry will continue to seek for the most constructive interfaces with NASA Headquarters, ORQA, ERC, NASA Parts Coordinating Committee and NASA Centers.

The Association will continue to search for middle ground where NASA, DOD, and industry can efficiently communicate and provide visibility of the total engineering base for advanced electronic parts standardization, qualification and application data.

Further workshops are needed to update foundations for NASA-industry collaboration in electronic research and development.

FACILITIES

PRINCIPAL ACCOMPLISHMENTS

The means was provided for appropriate representatives of NASA and industry to consider problems shared with respect to the facility support aspects in the performance of NASA contracts. The discussion during the workshop session pinpointed various aspects of the problems encountered by NASA and industry.

FOLLOW-ON ACTION

In view of the information developed during the workshop discussions between NASA and industry, and in the definition of working problem areas, it was apparent that continuing NASA-industry liaison should be developed and utilized for the purpose of recognizing specific problem areas [and providing all parties of interest with an exposition of anticipated problem situations in which the need for efficient use and economical acquisition of facilities support will be provided.] Representatives of NASA and industry will develop plans for such improved liaison, with a view toward developing means by which all appropriate NASA and industry personnel may share the results of this cooperation.

FINANCIAL MANAGEMENT AND REPORTING

PRINCIPAL ACCOMPLISHMENTS

A thorough understanding and appreciation of principal areas of mutual concern to NASA and industry were achieved. Through discussion and the constructive suggestions of workshop participants, positive progress was made in resolving problems surrounding Incremental Funding, the NASA Form 533 Financial Management System, Industrial Property Control, and related matters.

FOLLOW-ON ACTION

Definitive joint action and study by small working groups comprised of NASA and industry participants is planned in the following areas: providing adequate and timely incremental funds for contracts and subcontracts; improved fidelity and utilization of NASA Form 533 information; simplification of manhour reporting requirements; reduction in requirements for estimated actual costs; mechanization of NASA Form 533 reporting; simplified reporting on small contracts and development of a widespread, common understanding of terms used by NASA and industry.

LOGISTIC SUPPORT

PRINCIPAL ACCOMPLISHMENTS

Problems relative to the division and assignment of responsibility for "Program Support," between NASA Headquarters and the Centers, between the several Centers, and between both these groups and industry were identified and partly resolved by the adoption of a draft of a top policy "Program Support" document. A draft definition for the term "Program Support" was also adopted, and more detailed understandings concerning its composition were developed. Draft "Spares Computation Worksheets" were presented by NASA and reviewed by the conferees. Recognition was given to the problem of the multiple development by the various Space Centers of "Program Support" specifications.

FOLLOW-ON ACTION

The material developed in the workshop is now being reviewed and refined prior to release for application. The review will also identify new parallel or subordinate tasks, in addition to those studied in the workshop. The total remaining tasks will be reviewed by industry and NASA personnel with the subsequent formulation of an agenda and schedule. Target date for agenda and schedule is August 15, 1964.

PROCUREMENT (INCENTIVE CONTRACTS)

PRINCIPAL ACCOMPLISHMENTS

An important result of the workshop was the recognition that the controls and prior approvals now in the Armed Services Procurement Regulation and NASA Procurement Regulation were originally devised to fit a different type of contract and for use in a different procurement environment. An effort should be made to devise less elaborate and restrictive procedures under which essential controls could be retained by Government while permitting the managerial flexibility which the contractors desire and need.

FOLLOW-ON ACTION

Industry representatives will undertake to formulate and submit to NASA specific suggestions for tailoring essential contract controls to the operational requirements of the contract incentives.

PROPULSION

PRINCIPAL ACCOMPLISHMENTS

It was recognized that a problem exists in the area of contractual requirements documents issued by different NASA Centers and that organized efforts to solve the problem would benefit both NASA and industry. These include: improving schedules; reducing costs; providing better communication; eliminating "frills"; and providing better specifications and a central agency through which recommended changes

could be funneled. It was further recognized that in order to eliminate the submission of non-essential data, periodic reviews should be held during the life of contracts.

FOLLOW-ON ACTION

Cooperation of NASA management is to be solicited for concurrence in the need for a centralized indexing function or coordinating group which would:

a. Compile a complete index of all specifications or other contractual requirements documents called out in contracts issued by the various Centers.

b. Review the index thus compiled with the objective of consolidating the requirements of similar documents, or by eliminating those which duplicate or overlap.

c. Review the final list as it evolves from b. with respect to the DOD index, with further consolidation and elimination.

d. Arbitrate acceptable compromises of requirements, or institute certain testing to make decisions of judgment.

e. Keep the list current as work progresses.

SUBCONTRACT MANAGEMENT

PRINCIPAL ACCOMPLISHMENTS

An exchange of views on NASA Center practices and industry administration of subcontracts with recognition of need for better documentation in subcontract competition, coordination between technical and procurement administration, and agreement on subcontractor right of appeal and on make-or-buy policy.

FOLLOW-ON ACTION

NASA review of requirements applicable to terms and conditions of purchase orders including quality control approval.

TECHNICAL DIRECTION

PRINCIPAL ACCOMPLISHMENTS

A full exchange of views was conducted among representatives of NASA Headquarters, Centers and industry on the salient points of a proposed NASA-wide policy on Technical Direction. This full and candid exchange of opinion on a Headquarters policy, while still in a formulative stage, will undoubtedly prove beneficial to all parties as it moves through the coordination and implementation cycles.

FOLLOW-ON ACTION

Industry will cooperate closely with NASA to ensure publication of a fully coordinated document prior to implementation. It was also agreed that it would be mutually beneficial to hold a similar NASA-industry workshop on the subject of Phased Procurement should NASA decide to institute such a program.

TRAFFIC MANAGEMENT

PRINCIPAL ACCOMPLISHMENTS

Identified specific areas where a program of continuing, coordinated action by NASA and industry will accomplish traffic savings, improved management procedures and more effective utilization of transportation resources.

FOLLOW-ON ACTION

1. Representatives of NASA and industry will:

a. Establish a program providing for coordination of interests on matters of joint interest; b. Schedule a meeting with the Defense Traffic Management Service, Defense Supply Agency, to discuss development of a Freight Classification Guide for aerospace components; c. Explore with other agencies of Government and industry the feasibility of establishing a central repository of information on transportation equipment capable of handling articles of extreme dimension and weight.

2. The AIA Packaging and Preservation Committee will provide NASA with comments concerning a suggested packaging policy.

ECONOMIC DATA ON SCIENTISTS AND TECHNICIANS

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RECORD OF PROCEEDINGS

The Workshop on Economic Data on Scientists and Technicians convened at 9:45 a.m. in Capital Suite A, the Mayflower Hotel, Washington, D. C. on June 23, 1964 and adjourned at 3:55 p.m. the same day. Mr. E. B. Hincks served as moderator and recorded the proceedings.

REPORT

A. Government's need for economic data on scientists and engineers in the aerospace industry

1. Discussion

The Government representatives outlined the increasing emphasis on measuring the quantity and quality of people working on the various programs of interest to and financed by the Government. Congress has taken the projected use of skilled people into account in reaching judgments as to the size of appropriations. The Executive Office of the President is tending toward using manpower estimates in the budgetary process. The National Science Foundation is trying to meet demands from many segments of the public, including corporate managements and industrial associations, as well as labor unions and professional societies, for data on use, movement, training, and availability of scientists and technicians.

2. Conclusion

Industry representatives gained a deeper insight into the NASA problems in this area because of inadequacies in existing data.

B. Aerospace companies' data concerning scientists and technicians in their employ

1. Discussion

The industry representatives outlined the different sources and types of data involved in preparing proposals, identifying costs and people directly chargeable to a Government project as distinct from indirect and support charges, and experimental and statistical techniques for describing the various characteristics of professional, engineering, and scientific personnel.

2. Conclusion

NASA representatives learned of existing bodies of data with potential usefulness in the possession of industry.

3. Follow-up Action

It was suggested that NASA explore the benefits to be derived from analyzing special corporate collections of data, such as talent banks, develop special analytical programs, then contract with the possessing company for special runs of such data.

C. Incompatability of existing industry data with Government's needs for economic measures of scientists and technicians

1. Discussion

NASA outlined its analytical techniques for projecting, from estimated annual totals of NASA expenditures by its own laboratories, by industrial contractors and by educational institutions and nonprofit organizations, the employment of scientists and engineers in total and in R & D activities. Crucial to this technique is the development of a quantitative relationship between the number of dollars spent for a given activity and the number of scientists and engineers employed; this relationship is expressed as a ratio, or the number of dollars spent per scientist and engineer.

Improvement of this technique requires:

a. Refining the data on dollar expenditures by activity;

b. Refining the count of scientists and engineers employed by activity, from data from employers not presently available to NASA;

c. Refining the accuracy of the ratios.

2. Conclusion

Much of the refinement desired by NASA must be based upon data supplied by industrial contractors. In the light of the difficulties cited by the industry representatives in meeting NASA's specifications for additional data, it was suggested that NASA ask industrial contractors for specific ratios to be used in NASA projections, rather than estimating total data from which ratios might be developed by NASA.

3. Additional Comments

For refining the counts of scientists and engineers, it was suggested that NASA, rather than imposing new reporting requirements, join with DOD and the three military services in a manpower reporting system currently under development.

GENERAL COMMENT

There should be additional follow-on sessions between NASA, NSF, the Office of Science and Technology with representatives of industrial employers of substantial numbers of scientists and engineers and technicians to refine further the economic measures needed, analytical possibilities, and existing collections of data that are not currently being exploited.

With the growing interest in the role of scientists and technicians in the economy and their effect on rates of economic growth and change, needs are emerging for measuring previously unrecorded economic data on scientists and technicians. Relating needs and uses of data to internal company records and systems for gathering data is a developmental process. Both Government and industry must contribute to the process. The smoothness of developments depends upon keeping the channels of communication open between NASA and industry.

ELECTRONICS

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RECORD OF PROCEEDINGS

The Electronics Workshop convened at 9:40 a.m. in the Maryland Room, the Mayflower Hotel, Washington, D. C., on June 23, 1964 and adjourned at 4:35 p.m. the same day. Mr. J. M. Houston served as moderator and recorded the proceedings.

REPORT

A. NASA Presentations

Dr. Albert J. Kelley led a series of presentations by responsible NASA program and staff officers. They gave a candid appraisal of substantive program content, management, organization and major trends and problems of general management concern and interest. An examination was made of the state of accomplishment of program-project objectives, advanced research and technology to meet future space electronics requirements. Speakers and presentation titles were as follows:

Dr. A. J. Kelly	Introduction
Mr. C. H. Gould	Control, Stabilization, Guidance & Control
Dr. J. M. Walker	Communication, Tracking, Instrumentation and Data Processing
Mr. R. L. Daisey	Resources and Industrial Interface
Dr. A. J. Kelley	Introduction - Electronics Research Center
Mr. L. F. Gilchrist	Electronics Research Center Mission
Mr. D. L. Forsythe	ERTG/ERC Planning and Programming
Dr. A. J. Kelley	Closing Remarks

B. Discussion

Dr. Albert J. Kelley and Mr. R. A. Cooper served respectively as NASA and industry discussion leaders. Panel members, noted by asterisks (*) above, posed pertinent questions and fielded queries from others present. Resulting discussions follow.

C. Electronic Research Center's (ERC) planned relationship to NASA Headquarters, other NASA Centers, and Industry

1. Discussion

To carry out its mission of conducting needed research and directing a nationwide space electronics research program to keep the inventory filled with ideas and advanced techniques for optional use by project managers, the ERC will have a close working relationship with NASA Headquarters, other NASA Centers and Government laboratories, contractors, supporting industrial firms, universities and other segments of the scientific community.

The Headquarters Office of Advanced Research and Technology (OART) will program, allocate and control the Center's funds, and will assist in establishing

priorities among ERC's activities. Requests from other NASA centers and program offices for electronics research programs will be coordinated and approved by OART, as will the research program proposed by the Electronics Research Center.

Although ERC will, when fully implemented, carry out a large share of the agency's basic and applied research in space electronics, the work now underway at the other NASA centers will not be reduced. They will continue research where they have specific facilities or technical know-how, allowing them to monitor and supervise their own major procurement contracts.

Center-industry relationships will be established so that industry will better understand space electronics research requirements and be in a better position to fulfill them. Industrial research contracts will be let for a majority of the research program. In this way, the Center will not have to acquire as large a facility. Rather, it can use the research facilities of industry.

2. Conclusions

ERC will provide means for focusing the national capability in space electronics and will:

a. Direct a program of research grants and contracts with universities and industry.

b. Encourage work to advance progress in electronics by circulating results of basic and applied research to industry, universities, the scientific community, and throughout NASA. This will provide the needed engineering base for advanced component specifications.

c. Be the principal link between NASA, industry and the universities in setting objectives for research in space electronics.

d. Advise and assist technical program managers throughout the development and operating life span of projects.

3. Follow-up Action

Having obtained this clear understanding of these relationships, industry committees and individual companies can improve communication with NASA and develop the necessary constructive interfaces with NASA Headquarters, ERC and NASA Centers as ERC is implemented.

D. Planned Relationship between the Electronic Research Center and Department of Defense Research Activities

1. Discussion

Electronics research has a considerable base in Government, universities and industry. This base is the natural outgrowth of non-space related military electronics programs, which, of course, have considerable history. The problem with utilizing this base for space electronics is one of coordination. However, the space environment, especially for missions longer than ballistic probe flights, is unique.

2. Conclusion

Some one organization, such as Electronics Research Center, must have the knowledge, competence and connection with the NASA program to bring resources to bear on space electronics problems. In the coordination of electronics research, the Center will be dealing with technical societies, universities, non-profit organizations, industry, and the Department of Defense.

3. Follow-up Action

As ERC is implemented, industry committees must seek direct and efficient communication channels with ERC. Industry and ERC must seek to develop a constructive and dynamic interface to provide the teamwork required to achieve the national electronic space goals.

E. ERC Planned Capability, Mission and Operation

1. Discussion

ERC will establish internal research capability, to the extent necessary to provide a strong competence of its own, capable of managing and evaluating contracted effort.

The present ERC 25 employees will grow to 2100 by 1969. This will include approximately 700 professional people and 500 supporting technical personnel. A major ERC mission will be the organization, management, sponsorship and conduct of electronics research. Important are the compilation of failure histories and the materials and component research which will make possible common standards of performance, testing and specifications for use across-the-board in space electronics. Another is the research leading to inherently more reliable electronic equipment. Research tending to reduce size, weight, power and complexity and to increase environmental tolerance will be emphasized. Research is necessary to develop new techniques leading to better and more sophisticated performance.

The Center will exercise its mission in component technology, instrumentation and data processing, systems analysis, electromagnetic research, and guidance and control. The area to be implemented first is component technology. NASA needs common electronics performance standards which can be applied by all. ERC components research effort will involve work in solid state physics, materials, vacuum devices and electro-mechanics. In addition, research in understanding environments and environmental testing, standards theory and design criteria are envisaged to set standards to qualify parts.

ERC's relation to a given Center's need, for example, to develop an improved telemetry system, will be to keep the inventory full of techniques, ideas and procedures for use in such specific developments. ERC will also manage such research, both out-of-house and in-house, up to completion of feasibility demonstration.

NASA needs hardware primarily to get knowledge from space exploration. The definitions of knowledge to be sought will lead to definitions of research needed to develop new concepts and new systems capable of obtaining the knowledge sought. The absence of security restrictions will enable NASA to communicate its needs freely with industry, universities, technical societies, and other Government agencies.

If boiler plate information can be obtained once from companies, and response to RFP's be limited to specifics of the particular RFP, much wasteful cost can be avoided.

NASA asked industry opinion on unsolicited proposals versus RFP's for research tasks. Industry has some reservations regarding circulation of their unsolicited proposals by RFP's. However, industry recognizes that this may be necessary in order to find the best available proposal.

2. Conclusions

NASA sponsored space electronics research is planned to be much further out than industry would normally undertake on its own funds. ERC will formulate and examine anticipated long range problems in space electronics, and fund industry and university research to provide timely solutions.

Approximately 80 percent of the funds for the Center's research program will be spent on out-of-house contracts throughout the country. About $2 million will be spent by the Center for research during its first year of operation. The research budget is expected to grow to about $50 million in fiscal year 1969.

Several orders of magnitude improvement are needed in the areas of performance, reliability and longevity as illustrated by need for:

- Improved TV transmission from Mars.
- 1000-foot diameter telescope in space, accurately pointed to look for life elsewhere.
- Guidance for electric propulsion vehicles for long trips to Mars, etc.
- Better accelerometers for more accurate measurement of escape and mid course velocity, and capable of micro-g performance.
- Instruments to measure wider ranges of parameters.

3. Follow-up Actions:

As ERC is implemented, there will be a need for further workshops such as this one to update the understanding required for development of a healthy interface between ERC and industry.

F. Standardization and Qualification of Advanced, Space-Oriented Parts

1. Discussion

ERC influence on standardization and qualification will be through performance of needed research rather than edict. ERC will provide the engineering research base for several orders of improvement of parts reliability, longevity, and performance in space environments.

Until this research base is available, NASA will use the best parts and specifications available. During this interim period, ERC will assist the NASA Parts Steering Committee in commonizing specifications, qualifying parts by type to known standards, and developing means of assurance that parts delivered meet the specification requirements. The Centers will also provide inputs to ERC on part failures. ERC will contract for research to determine failure mode and corrective action. ERC will get results back and implement these through ORQA to upgrade specifications. This information will be made available to project managers for use or not at their option, as pertinent to their specific needs.

Centers will provide ERC information on reliability, longevity, and performance requirements for advanced systems. ERC will gather precise information on space environments and fund the needed research to develop the engineering base of advanced ideas and techniques needed, and communicate these to component engineers and to system application engineers to develop, standardize and qualify the needed parts.

Since NASA is a relatively small lot user, lot sampling is not practical. No present specifications provide control of processes to the degree needed by NASA. New ideas and techniques must be developed to insure better specifications, catering to space requirements and adequate control of processes and eliminating failure mechanisms as they are identified.

By supplying qualification approval (QA) test data, IDEP has reduced redundant testing, helped in selection of parts and served as a base for non-standard parts approval by military. Industry has the same need for data on which NASA qualification approval is based.

Integrated circuits depending on structure of single crystals may be susceptable to radiation disturbance. Advantages of reduction in weight, size and power consumption are attractive. NASA is investigating this area and carefully analyzing it. Further analysis will be tied into ERC standardization and reliability research.

Present NASA coordination of Standardization and Qualification information seems to be internal. Many dedicated participants in SPWG, ER Series, 38100 Series coordination, feel the need for a single NASA-DOD-Industry Parts Specification Management effort.

2. Conclusion

A major ERC mission is to develop the engineering base for better specifications and components which are several orders of magnitude better than present components in space applications. During this 4- or 5-year development phase, there is a need for improved communication between ERC, DOD and industry.

Final selection and application of parts to a system will be the decision of the project manager. This requires an engineering base consisting of a blending of information from parts producers, NASA standardization and qualification data, and system manufacturers own application test by both black box engineer and parts engineer.

Advanced research, standardization, selection and application of parts for a given system must work closely together.

ERC qualification approval (QA) will be by type rather than by part or manufacturer. QA will be mostly for a given application with statement of conditions qualified to. As knowledge grows on space environments, the conditions used for QA will change.

Dissemination of information on qualification testing and cataloging is not a prime ERC mission, but a function of the Office of Reliability and Quality Assurance, NASA Headquarters.

3. Follow-up Action

Industry will seek to improve its communication and coordination with ORQA, ERC and NASA Parts Steering Committee, on parts standardization, qualification and application data.

Continue to pursue a NASA-DOD-Industry Parts Specification Management program for electronic components with established reliability.

GENERAL COMMENTS

The present and rapid change in electronics in the next five years requires the maximum of coordination between NASA-DOD and industry. Industry hopes that a means for continuous NASA-Industry-DOD communication and visibility of overall advanced parts needs, development status and parts application and qualification data can be initiated. Industry is looking for the middle ground whereby NASA, DOD and industry can provide commonality of needed parts and internal procedures. This face-to-face discussion with responsible NASA electronics program and staff representatives encourages industry to hope that this middle ground can be found.

Industry will continue to seek for the best ways to provide constructive participation in the NASA-DOD Advanced Components area.

Industry appreciates the candid and excellent presentation of present plans for the ERC mission, organization, operation and relation to other electronics efforts. When fully digested, this information will provide a valuable foundation for improved communication with NASA and develop the optimum constructive relation with ERC and overall NASA electronics efforts.

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RECORD OF PROCEEDINGS

The Facilities Workshop convened at 9:45 a.m. in the District Room, the Mayflower Hotel, Washington, D. C., on June 23, 1964 and adjourned at 4:30 p.m. the same day. Mr. Wilkinson served as moderator and recorded the proceedings.

REPORT

A. NASA-Industry Concept of Balanced Industrial Facilities

1. Discussion

Discussions indicated that a better understanding should be sought of the need for and use of facilities, whether Government or contractually furnished, to support NASA contracts and programs. The current situation with respect to the furnishing and use of facilities was reviewed. NASA participants outlined the present problems encountered in the acquisition and use of the facilities using NASA funds, military service facilities, and contractor owned or leased facilities.

2. Conclusion

It was agreed that informational liaison with respect to the furnishing and use of facilities to support NASA programs on a balanced basis would be continued through NASA/industry liaison.

B. Uniformity of Facilities Contract Schedule Provisions

1. Discussion

NASA representatives discussed the need for contractual flexibility in the acquisition and use of facilities to meet the needs of various unique and advanced scientific and engineering programs conducted by NASA. An acknowledgement was given as to the need for, in many instances, contractual arrangements covering facilities differing significantly from current practices of other Government agencies, and even between individual NASA operations. It was pointed out that the recently issued NASA Procurement Directive 64-1 contained the procedures to be used in determining contractual provisions covering the facilities portion of the contracts.

2. Conclusion

It was agreed that there exists a real need for a greater uniformity in the adoption of facilities contract schedule provisions. NASA had been and will continue to review facilities contract clauses with the view to their improvement and where indicated attainment of uniformity.

C. Furnishing, Use, and Maintenance of Industrial Test Complexes

1. Discussion

Problems in connection with the design and acquisition of new facilities and the use, maintenance, and modernization of existing facilities were reviewed. Many problems, such as the determination of contract types, incorporating growth capabilities into facilities and the availability and use of facilities by other Government agencies and companies not in contract with NASA (including the leasing of facilities) were considered.

2. Conclusion

It was recognized that there is room for improvement in these areas, and that continuing NASA liaison with industry would serve to solve problems and improve facility utilization.

D. Inventory of Industry and Government Test Facilities

1. Discussion

NASA representatives emphasized the need for a system of inventory of available facilities in order to achieve more efficient determination of the use of existing facilities. Such an inventory would include all facilities, both governmentally and privately owned. Current inventory practices, such as those maintained by the DSA Defense Industrial Plant Equipment Center (DIPEC) were explored.

2. Conclusion

It was agreed that, particularly in the equipment and tooling areas, as the development of inventory systems is being accomplished, and such systems participated in by Government and industry a degree of needed inventory control serving a basis for adequate facilities planning will be provided. Further, new inventory systems covering any areas of facilities should be developed with full Government-industry cooperation.

E. Separate Definition for Special Test Equipment

1. Discussion

The development of a definition for Special Test Equipment (STE) by the ASPR Committee was discussed. NASA personnel indicated the desire to await the result of ASPR Committee action prior to further consideration to the developing of the NASA definition of STE and special tooling.

2. Conclusion

NASA agreed that a definition was needed and desired, and additionally endorses the concept of breaking out special test equipment for separate contractual treatment.

FINANCIAL MANAGEMENT AND REPORTING

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RECORD OF PROCEEDINGS

The Financial Management and Reporting Workshop convened at 9:30 a.m. in the Potomac Room, the Mayflower Hotel, Washington, D. C., on June 23, 1964, and adjourned at 4:30 p.m. the same day. Mr. Joseph Corie served as Chairman, and the proceedings were recorded by Mr. T. G. Haertel.

REPORT

A. Incremental Funding

1. Discussion

Discussion centered around the current problems experienced by many contractors in receiving additional incremental funds prior to exhaustion of those previously obligated against their contracts. NASA's incremental funding practices were explored in depth. The principal reasons for NASA's incrementally funding contracts on a short-term basis were determined to be:

a. To maintain fiscal mobility and flexibility between contracts within a given program.

b. To obtain better fiscal discipline and visibility.

c. To facilitate commencement of a program prior to availability of new fiscal year funds.

Industry's needs for stable funding practices, to permit orderly financial planning, were also recognized.

2. Conclusion

a. NASA's reasons for incrementally funding contractors are in general valid.

b. The incremental funding system employed by NASA should be revised to:

(1) cover longer periods of time, i.e., 90 days or more;

(2) provide a minimum of 60 days operating money to the contractor in instances (giving full consideration to the time required to process a contract amendment to maintain this position);

(3) be limited to larger contracts.

3. Follow-up Action

Both NASA and industry indicated a desire and willingness to work on incremental funding problems. Industry agreed to prepare a statement of these problems (including actual examples) and recommendations for their solution. Representatives of NASA and industry will meet as soon as these recommendations have been developed to work jointly on improvements in the incremental funding system.

B. Subcontract Funding

1. Discussion

Discussion encompassed incremental funding and its effects on subcontractors. Contractors generally fund subcontracts after additional increments have been received from NASA; hence there is an additional time-lag built into incremental funding of subcontractors.

2. Conclusion

If the problems created by short-term incremental funding of prime contracts can be resolved, the difficulties encountered in subcontract funding will be solved at the same time.

C. Rationale of NASA Form 533

1. Discussion

This report is the basis of a complete financial management system, as opposed to being merely a cost status report. The reporting form has recently been revised to include reporting of direct labor manhours and several minor revisions.

2. Conclusion

The principal uses of NASA Form 533 are:

a. In program management, particularly with relation to program operation plans.

b. Evaluation of cost performance.

c. Evaluation of cost changes related to schedule changes, by reference to PERT or other scheduling systems.

d. Measurement of effectiveness of the contractor's management, particularly in the planning and performance area (i.e., Contractor Performance Evaluation and Defense Contractor Planning Report).

e. Integration of technical progress and planning with contract cost performance.

f. Prediction and warnings on overruns and underruns.

g. Identification of soft spots within programs.

h. Visibility to facilitate trade-offs between contracts and reprogramming of funds within programs.

i. Development of NASA internal cost estimating system.

j. Accruals of external program costs.

3. Follow-Up Action

A joint panel of NASA/Industry personnel may be established to examine how the system is working and to determine ways of making NASA Form 533 more useful to both NASA and its contractors, on a bilateral basis.

D. Reporting of Man-Hours

1. Discussion

Reporting of man-hours was determined to be the most difficult item for contractors to complete in NASA Form 533. Accordingly, the purposes for which this information is used by NASA were explored in detail. Their principal uses are:

a. To explain overruns (e.g., changes in manpower mix).

b. To determine manpower working on NASA contracts.

c. To check actual labor hours against those estimated by the contractor in his proposal (performance and fee relationship).

d. To determine level of effort, particularly on contracts dealing with services.

The value and accuracy of reporting man-hours against individual contract tasks were seriously questioned, particularly in the light of the considerable expense involved.

2. Conclusion

a. It may be possible for industry to provide more accurate information at less expense, which at the same time meets NASA's objectives.

b. Reporting of man-hours is more difficult for electronics manufacturers than for airframe and missile manufacturers.

c. Breaking functional man-hours down by task is at best an extrapolation, and may serve no useful purpose.

3. Follow-Up Action

As previously proposed by NASA, industry will develop an alternative to reporting of man-hours by task which appears to fulfill NASA's needs. NASA and industry representatives will meet to effectuate possible revisions relative to reporting of man-hours, which will simplify this task for industry and at the same time meet NASA's objectives.

E. Accounting Period Cut-Offs and Use of Estimated Actuals

1. Discussion

Current instructions relative to NASA Form 533 require extension of costs to the end of the calendar month, by detailed task, in order to coincide with the financial

management and budgeting system employed by NASA. It was noted that these extensions may be of limited value, since contractors who employ a fiscal month system balance out at the end of each calendar quarter. However, it was also noted that NASA's financial management is by month rather than by quarter. The value of using extensions or estimated actuals was questioned, particularly on a task by task basis. No determination was possible relative to whether the use of actual cost information (on a fiscal month basis) would be adequate for NASA's financial management system.

2. Conclusion

Depending on the effect use of actual fiscal month costs may have on NASA's financial management system (as opposed to projected costs), it may be possible for NASA to use fiscal month actuals in lieu of extending costs to the end of the calendar month.

3. Follow-Up Action

NASA will make a study on selected projects and contracts, comparing results based on reports actually submitted, with reports which would have been submitted using each contractor's own cut-off date. If the differences are not significant, NASA will consider changing its Form 533 cut-off requirements.

F. Projecting Costs to Complete

1. Discussion

The necessity for projecting estimated costs to complete was explored. The uses made of estimated costs to complete are as follows:

a. Development of total and time-phased program estimates.

b. Performance evaluation (creation of a plan with which to compare later actuals).

c. Highlighting of apparent "soft" areas in programs.

d. Forecasting of needs for additional, incremental contract fund needs.

e. Basis for appropriation requests.

f. Program monitoring and evaluation.

NASA's participation in the Contractor Performance Evaluation system of DOD was also explored, and it was indicated that a pilot experiment is in progress utilizing the DOD version of CPE on 12 contracts.

2. Conclusion

Projection of costs to complete is essential to NASA's financial management system, at least for the present.

G. Mechanization of Reporting

1. Discussion

The feasibility of using a mechanized reporting system for NASA Form 533 reports was explored and discussed. It was determined that approximately 75 percent of NASA Form 533 requires use of individual judgment, and is therefore manually prepared, although much of the raw data employed is obtained from contractors' mechanized accounting systems.

2. Conclusion

a. Mechanized NASA Form 533 reports are probably not advantageous at present, except on an individual contractor basis.

b. Provided some of the judgment factors currently required in NASA Form 533 preparation can be reduced or eliminated, mechanization of the Form 533 may be profitable.

3. Follow-Up Action

NASA is conducting an in-house feasibility study relative to mechanizing their Form 533 analysis. Industry and computer specialists will be invited to participate in any study involving a general requirement for industry submittals on a mechanized basis.

H. Industrial Property Control

1. Discussion

It was determined that NASA Form 1018 ("Analysis of Industrial Facilities & Material Report") will, in general, be required only under "facilities" contracts or "supply" contracts which contain facilities (capital) money. Also, only direct-charge material which will not be charged out against end items in a reasonable time (i.e., stock pile material) will be subject to reporting on the material line of the report. Use of NASA-furnished equipment on DOD programs was also discussed.

2. Conclusion

a. In view of the limited scope of NASA's reporting requirements on Form 1018 (proposed), no serious objections to this Form are apparent.

b. In general, use of NASA-furnished equipment is permitted on a rent-free basis, but NASA contracting officer approval must be obtained prior to such use.

I. Reporting on Contracts Under $500,000

1. Discussion

It was noted that requiring a full-scale NASA Form 533 on smaller contracts (and on service, task and university contracts) is an expensive and perhaps unnecessary burden. It was conceded, however, that on some smaller contracts, particularly those in financial trouble, a full scale Form 533 report may be essential.

2. Conclusion

A simplification of NASA Form 533 reporting on smaller contracts and on service, task-type and university contracts should be developed and implemented.

3. Follow-Up Action

Industry will prepare a proposal for simplified NASA Form 533 reporting and/or recommend alternate contract clauses relating to financial management reports for these contracts. After this proposal is developed, representatives of NASA and industry will meet to consider industry's recommendations and make necessary revisions to reduce the reporting load to a minimum. NASA has already initiated an internal study looking toward the development of a "family" type of report, i.e., variants on the NASA Form 533 adapted to specific contract situations.

J. Revision of NASA Procedures

1. Discussion

NASA and industry indicated a sincere mutual interest in developing NASA procedures bearing on contractor operations which are both consistent with NASA's needs and with the established industry practices.

2. Conclusion

a. The cooperation between NASA and industry in developing NASA procedures in the financial management area has been excellent.

b. NASA and industry cooperation in developing procedures in other areas can prove equally advantageous to NASA and industry.

K. NASA Project 60 Participation

1. Discussion

NASA is participating in the DOD Project 60 experiment to the maximum extent possible. This participation excludes the functional areas of Audits and Payments.

L. Financial Reserves for Incentive and Award Fees

1. Discussion

NASA's practices in obligating or committing funds for payment of incentive and award fees were discussed.

2. Conclusion

a. NASA obligates funds to cover Target Fees only.

b. Funds are reserved (by commitment) to cover anticipated, additional incentive and award fees.

M. Semantics

1. Discussion

Problems surrounding different interpretations of the same terms were discussed.

2. Conclusion

a. Different interpretations of the same terms can be a major problem in the relationship between NASA and industry.

b. It is necessary that a common understanding of terms be developed.

3. Follow-Up Action

NASA distributed a list of terms employed by them, together with a tentative definition of these terms. NASA representatives will complete coordination of these tentative definitions and industry will contribute its recommendations for improvement of these. After the completion of coordination, a firm list of terms used and accompanying definitions will be published by NASA and distributed to industry.

GENERAL COMMENTS

Considerable progress in achieving a mutual understanding between NASA and industry was made. Follow-up action agreed upon promises to be even more productive. Additional workshops, conducted on an annual basis, might prove to be mutually advantageous, particularly from the standpoint of identifying further areas of mutual concern on which NASA and industry attention should be focused.

LOGISTIC SUPPORT

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RECORD OF PROCEEDINGS

The Logistic Support Workshop convened at 9:40 a.m. in the North Room, the Mayflower Hotel, Washington, D. C. on June 23, 1964 and adjourned at 5:00 p.m. the same day. Mr. W. C. Winkler served as Chairman with Mr. George W. Dress as moderator, and the proceedings were recorded by Mr. Dress.

REPORT

A. Common Definition of Support Compatible to Industry and NASA

1. Discussion

Prior discussions between NASA and industry have indicated that the use of the term "Logistic Support" conveyed different thoughts than intended by the user. In order to establish basic policy planning, it became apparent that a term and definition needed to be developed, which term would describe and convey the same meaning to all parties concerned.

2. Conclusion

"Program Support" was the term that was finally developed which term conveyed the same basic reaction to all conferees. The following definition was accepted and will be used until superseded, with the meaning as contained in the following definition:

> "Program Support" consists of the total accumulation of personnel, materiel, facilities, services and data that are required to assure the satisfactory performance of scheduled programmatic tests or operations. It is an integration of separate, but interdependent functions. The common links that hold the support functions together, and the basis for program management, are the accepted operational, maintenance and support concepts and follow-on plans. Support may be applied to a single product or to a space or ground support system, to contractor or Government operations, combinations of each, or a phasing of one to the other."

3. Additional Comments

Sub-definitions will be developed. However, the major task has been completed.

B. Scope of the Basic Policy—"Program Support"

1. Discussion

Development of a basic Program Support policy and assignment of responsibility for carrying it out was recognized by all conferees as a major objective that would provide substantial mutual benefits. Examples indicating the desirability of this objective were presented with the conclusion by all concerned that any such established policy should effect a common understanding from Headquarters NASA to the NASA Space Centers and projects and thence to the contractor.

2. Conclusion

The development of the basic policy was included in the policy guide as developed under this item but as carried forward under item C which item included the requirements for program and/or product support maintenance plans.

3. Follow-Up Action

This item will naturally grow and be refined as experience is gained in its usage.

C. Identify the Major Component Functions or Tasks that Make Up the NASA Program and/or Product Support Maintenance Plan

1. Discussion

Following a considerable amount of discussion, the application of the policy as developed under agenda item B was used as the basis for developing the requirements that should be included in a program support directive.

2. Conclusion

Attached hereto is the "Policy Guide for NASA Space Systems Program Support" as developed by the conferees.

3. Follow-Up Action

The material developed, produced in a limited period of time, represents the best efforts of the conferees. It is naturally subject to growth and development and it is anticipated that experience in the usage of the document will bring forth requirements for revision and change.

D. Standardization of Provisioning Computation Work Sheets

1. Discussion

The procedure directing NASA personnel to review spare parts computations leading to spares requirements has established a need for the development of methods that are understandable and usable by the contractor as well as the reviewing personnel. The attached two types of work sheets have been developed by NASA and presented to the conferees for review and comment. These are not released for use at this time and are subject to change and revision prior to release.

2. Conclusion

The computation work sheets will be distributed to all industry members for comments and/or recommendations and if desirable, complete substitution by industry recommended forms.

E. Development of Program Support Specifications by the Individual NASA Space Centers

1. Discussion

An example of a handbook specification that was developed by one of the NASA Centers was presented to the conferees for the determination of the policy that should apply to the development, review and coordination of such specifications. It was pointed out that the duplication and conflict that could be created by this type of development, together with the costs that could be incurred by excessive requirements, dictated that review procedures be established prior to the release of specifications of this type.

2. Conclusion

It was concluded that the requirements for the development of specifications of this type should be coordinated by the various centers to NASA Headquarters and that industry participation should be established at the earliest possible date. It will be necessary for NASA Headquarters to issue instructions to the Centers relative to the development of this type of specification and to request that any that have been issued prior to this date be forwarded to NASA Headquarters for the purpose of establishing an industry review.

GENERAL COMMENTS

The material contained in this report and the attachments thereto will be reviewed by the conferees. Suggestions from the conferees for change or improvement, will be forwarded by August 15. Such recommendations from NASA conferees will be addressed to Mr. Lautenschlager while the industry comments will be forwarded to the industry chairman and to the workshop moderator.

Continuing or future tasks that may be developed as a result of this workshop will be identified by the term "Program Support" instead of "Logistic Support."

DRAFT

1. SCOPE

1.1 This policy establishes requirements for the orderly and systematic development of an integrated space system program support. It provides the basis for development of detailed support plans, for a system or major item of equipment covering requirements for all support services and data, personnel material and facilities required to assure satisfactory performance of scheduled programmatic tests or operations.

1.2 This directive is intended to facilitate a common understanding of programmatic test and operational support requirements between NASA and the contractor, beginning with the contract definition phase of space systems development. It is intended to ensure the provision of compatible and essential support requirement guidelines; since support may be applied to a single product or to a space or ground support system, to contractor or Government operations, to a combination of each or to a phasing of one to the other.

1.3 NASA shall provide in the Request for Proposal (RFP), requirements consistent with the attached check list, for submission of a support and maintenance plan in response to the RFP.

2. APPLICATION

2.1 In applying this document to space systems or space systems equipment, the magnitude of support effort required will be in consonance with the developmental phase and specific nature of the system to be supported. As a guide in this direction, the support program check list attached shall be utilized to aid in describing the scope of contractor support activity for an individual program in terms of essential items, and to assist in developing a contractual exhibit for specific programs.

3. REQUIREMENTS

3.1 Support Guidance Meeting(s)

Concurrent with execution of the contract, NASA shall schedule support guidance meetings, composed of responsible Government and contractor representatives whose purpose it will be to: (1) monitor support program progress and (2) provide resolution of detailed support problems.

3.2 Support and Maintenance Plans

3.2.1 When a support and/or maintenance plan is required the contractor will base development of the data on a comprehensive maintenance analysis of all major space system and support equipment items. The contractor shall ensure that a single maintenance task analysis is performed in support of all elements of the support program.

4. SUPPLIER AND SUBCONTRACTOR SUPPORT REQUIREMENTS

4.1 The support program of the prime contractor shall contain provision for feedback and control of the support characteristics of those items and services being procured from suppliers. This shall include establishment of support program requirements in specifications, purchase orders and other contractual data used in procurement of equipment items. The support requirements for these items shall be determined on the basis of the items' effect on the total space system program.

5. PROVISIONING GUIDELINES

NASA will provide the guidelines under which provisioning techniques will be employed and participate in high cost items provisioning reviews.

CHECK LIST OF SUPPORT REQUIREMENTS
(Attachment to)

1. Support Plan

   The support plan shall include all individual support requirements (spares, publications, training, etc.) in terms of individual milestone actions and interfaces in terms of the basic space systems development schedule and program.

2. Maintenance Plan

   Contractor will establish a maintenance concept or plan which will define the levels and frequencies at which maintenance will be performed to ensure that the system and/or subsystems meet operational requirements.

3. Support Manual Plan

   This plan will identify the support manuals required by title, and will define the level of information to be contained as well as the proposed format.

4. Training and Training Equipment Requirements
5. Personnel Requirements
6. Support Services Requirements
7. Facilities Requirements
8. Transportation Requirements
9. Configuration and Control Requirements
10. Communications and Data Requirements
11. Supply Support (Spares) Requirements
12. Site Activation Requirements
13. Field Technical Support Requirements
14. Propellants and Pressurance
15. Support Equipment Requirements

DRAFT

SPARES COMPUTATION
(Applicable to Non-Reparable Items Costing Over $25.00)

Model Number	Part Number
Top Assy No. (Next Higher Assy)	Noun
SMR	Procurement L.T.
Support Period	

Computation

Site Rqts - QPEI x MRF x EOM = Site Stockage Rqmt _____

Backup - QPEI x MRF x EOM = Backup Rqmt _____

Requirement for Deployment Support

Location	% of Total Program	Quantity
Contractor Facility	---	---
Test Site A	---	---
Test Site B	---	---
NASA Installation	---	---

Total _____

*Adjusted Procurement Quantity _____

CONFIGURATION	ACCUMULATED RQMTS	QUANTITY

SHIPPING SCHEDULE

1964												1965											
J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D

*Decision to procure quantity greater than total computed requirement for site deployment must be justified based on criticalness of immediate need.

DRAFT

SPARES COMPUTATION
(Recoverable Type Items)

Model Number

Part Number

Top Assy Number

Noun

SMR

Repair Cycle

Site % _____ Time _____

Depot % ____ Time _____

Average _____

Computation

Site Rqts - QPEI x MRF x RCM = Site Rqmt___x *WOR = __BU__

Backup - QPEI x MRF x EOM = x x x x x x x x x x x __BU__

Total Computed Rqmt _____

REQUIREMENT FOR DEPLOYMENT SUPPORT

Location	% of Total Program	Quantity
Contractor Facility	---	---
Test Site A	---	---
Test Site B	---	---
NASA Installation	---	---

Total _____

†Adjusted Procurement Quantity _____

CONFIGURATION	ACCUMULATED RQMTS	QUANTITY

SHIPPING SCHEDULE

1964												1965											
J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D

*Computation for W.O. support quantities will not be made when estimated factor is less than 10%. Establishment and use of factor over 10% must be supported by past history on similar items.

†Decision to procure quantity greater than total computed requirement for site deployment must be justified based on criticalness of immediate need.

NASA
(Formulated in June 23, 1964 Workshop)

"Program Support" consists of the total accumulation of personnel, materiel, facilities, services and data that are required to assure the satisfactory performance of scheduled programmatic tests or operations. It is an integration of separate, but interdependent functions. The common links that hold the support functions together, and the basis for program management, are the accepted operational, maintenance and support concepts and follow-on plans. Support may be applied to a single product or to a space or ground support system, to contractor or Government operations, combinations of each, or a phasing of one to the other.

1. PERSONNEL

Support, as applied to the subject of PERSONNEL, consists of the identification of the required types of operational and support skills, or the qualitative personnel requirements. The quantitative requirement is developed by applying the operational and maintenance plans to the qualitative requirements. The estimated manning requirements, when checked against available resources disclose personnel deficits. Requirements for the training of customer and contractor service, operations and maintenance personnel, including the types of courses, are developed from the analysis of the qualitative and quantitative personnel data. The planned training courses serve as the basis for determining requirements for training aids, parts, equipment, facilities and instructors.

2. MATERIEL

Support MATERIEL consists of those things used in or to support tests or operations. Such items include support equipment, component or spare parts, etc., and may include training systems and equipment. The management of materiel consists of the functions of Procurement, Supply, Transportation and Maintenance.

A. PROCUREMENT

The PROCUREMENT function establishes policies that will be applicable during initial, and replenishment procurement, or provisioning actions. This includes the funding methods and limitations, the quantity of units to be supported, the time period of support, the utilization of contractor facilities and a definition of the quality control responsibilities.

B. SUPPLY

The SUPPLY support function consists of defining, implementing and practicing the applicable provisioning policies, stockage objectives, requisitioning methods, distribution plans, repair policies and support quality control responsibilities. This includes recognition of and planning for the normal or peculiar condition that may be encountered in the storage and management of materiel. Provisioning includes not only establishing and managing spare parts requirements, but also the requirements for support equipment such as special tools, ground handling, and test equipment, and all data required for provisioning purposes.

C. TRANSPORTATION

The function of TRANSPORTATION support is to evaluate the program planning to determine the degree to which normal methods will apply, and to uncover any peculiar conditions. Not unusual conditions, but important ones requiring recognition

may apply, such as the creation of short time supply lines on high cost or critical parts programs, the use of helicopters or special routings. Consideration is given to the selection of a type of supply priority system, the use of Government transportation office services, the determination of policies relative to packaging and preservation, and the identification of requirements for standard and non-standard materiel handling equipment.

D. MAINTENANCE

The function of MAINTENANCE support is to evaluate existing maintenance procedures and facilities for adequacy, define the degree of maintenance responsibility to be delegated to the customer, contractor and subcontractor organizations, define maintenance responsibilities by system and/or equipment, plan policy for incorporating modifications, establish and define types of instructions or manuals, select a materiel deficiency or trouble reporting procedure and to plan and establish requirements for field support technicians and specialists.

3. FACILITIES

The term FACILITIES applies not only to the customer's installations such as field operating, repair and storage sites, bases and depots, but also to contractor's facilities required for the storage, repair or maintenance of "end item or support materiel." Consideration is given to peculiar or special requirements such as humidity and temperature controlled buildings, special fuel storage provisions or test cells. Total program requirements must be planned and scheduled, compared with existing available facility inventories, and arrangements made for modifications to, or the use thereof.

4. SERVICES

Support SERVICES are those efforts that may or may not be established as specific contract requirements. Examples of such services may be: the warehousing and management of customer owned support materiel, maintaining parts usage records, reporting failures, analyzing failures, maintaining product status records, supplying modification kits and providing field technicians and specialists.

5. DATA

Support DATA consists of the manuals, instructions, and procedures required for the operational and maintenance support of a product, or all the components of a system or project. Such publications may cover service, operation, maintenance, handling, erecting, loading, testing, checking, launching, etc. It also includes provisioning documentation for contractor and vendor designed items as well as text material, slides and charts for training.

PROCUREMENT (INCENTIVE CONTRACTS)

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RECORD OF PROCEEDINGS

The Procurement (Incentive Contracts) Workshop convened at 9:30 a.m. in the Virginia Room, the Mayflower Hotel, Washington, D.C., on June 23, 1964 and adjourned at 4:30 p.m. the same day. Mr. Howard W. Neffner served as Chairman with Mr. J. D. Durand as moderator, and the proceedings were recorded by Mrs. Rachel Feild.

REPORT

A. Incentive Type Contracts As Compared With Other Types of Government Procurement Contracts

1. Discussion

The purpose of the discussion was to point up in what areas of work incentive type contracts are superior to firm fixed-price contracts or cost-plus-fixed-fee

contracts, and in what areas the latter two types of contracts are superior. It was recognized that Government procurement contracts cover a wide spectrum, at one end of which the work to be done can be stated with precision and work specifications can be drawn that are both detailed and comprehensive. At the other end of the spectrum, as in the case of research, and research and development activities, the state of the art is frequently such that only general goals or desired results can be stated.

2. Conclusion

The discussion revealed a general agreement that the incentive contract finds its best uses in the middle segment of the procurement spectrum. Fixed-price contracts are most suitable where the state of the art has progressed to a point where complete specifications can be prepared and the know-how exists to manufacture or prepare the article desired. Cost-plus-fixed-fee contracts are most suitable for use at the other end of the spectrum, where the objective or result sought to be accomplished is in advance of the state of the art and, consequently, detailed specifications cannot be prepared, and methods and procedures to reach the desired objective may be unknown.

B. Experience of Industry Under Incentive Type Contracts for Research, Research and Development, or Non-Hardware Development

1. Discussion

The objective of the discussion was to elicit what effect incentive type contracts have had on industry earnings. It was recognized that national economic trends and trends in the defense and space industry unrelated to types of contracts used by the Government, have had an important bearing on earnings. It was also recognized that, particularly insofar as NASA is concerned, incentive type contracts have been used for a comparatively short time, and NASA has not established a data bank relative to earnings from the performance of such contracts.

2. Conclusion

The discussion revealed the general agreement that there is not enough of experience in incentive contracting for research, research and development, and non-hardware development, to determine to any reasonably accurate degree the effect of incentive contracts on industry earnings.

C. NASA Program to Increase Use of Incentive Contracts

1. Discussion

The intent of the discussion was to acquaint industry representatives with the NASA program to increase the use of incentive contracts for new procurement and to convert current cost-plus-fixed-fee contracts to incentive contracts.

2. Conclusion

The discussion revealed that, with respect to new procurement, NASA's position is that the use of incentive contracts shall be the rule rather than the exception. It is recognized, however, that there will be unusual cases involving major breakthroughs in the art, where cost-plus-fixed-fee contracts will have to be used. In others, involving research or research and development in relatively unknown fields, the use of incentive contracts rather than cost-plus-fixed-fee contracts will have to be studied carefully. To facilitate the use of incentive contracts, particularly in such cases, NASA plans to use the "phased procurement" approach. This involves a period of information gathering regarding the job to be done, to determine what can be accomplished and what approach should be followed in the work. Thereafter a determination can be made as to the most appropriate type incentive contract to be used.

With regard to the conversion from CPFF contracts to incentive contracts, NASA Headquarters has called on the various Centers to study the contracts which they are administering to determine which are suitable for conversion to incentive contracts. In addition, NASA Headquarters is studying all contracts over a specified dollar amount to determine which ones can be so converted. This is a tremendous task, one of the principal elements of which is to determine the percentage of completion of the various contracts and to establish what is the latest point at which conversion can be made.

D. NASA Position on Certain DOD Contract Practices

1. Discussion

The aim of this discussion was to indicate certain DOD contracting practices which have not been adopted by NASA, and what NASA uses in place of them.

2. Conclusion

It was pointed out that NASA had studied carefully the weighted guidelines approach to profits under Government contracts. While recognizing the value of this approach to Department of Defense contracts, NASA concluded that other techniques were more suitable for their procurement and, consequently, NASA still uses the nine criteria which were formerly contained in ASPR and now appear in the NASA procurement regulations. With regard to project definition, this concept is used by NASA, but not as a mandatory, across-the-board device. It is used when appropriate. With regard to contractor performance evaluation, NASA is not in a position at this time to say that this approach is worth the effort it involves. Currently, a limited number of selected contracts are being tested under the evaluation procedure, but it is too soon to expect conclusions. It is likely that, at some period, NASA will join in the use of the DOD databank.

The discussion also revealed that the rate of profits on incentive contracts is a matter of policy not of statutory prescription.

3. Follow-Up Action

Industry representatives urged NASA to re-examine its policy relative to levels of profits on incentive contracts. It was recommended that more weight be given to the performance factor in such contracts where multiple incentives are used.

E. What Controls Must a Contractor Have to Perform, and What Controls Must NASA Have for Incentive Contracts

1. Discussion

These questions generated differences of viewpoints between industry and NASA representatives. Industry pointed to the difficulty of making the prompt management decisions, essential to full play of the contract incentives, under the burden of the time-consuming processes leading to Governmental approval in the various areas of constraint. NASA upheld the current practices as prudent procurement management intended to avoid incidents which occurred prior to the imposition of certain of the cited controls.

2. Conclusion

It was acknowledged that the Government's unusual position as a buyer carries with it certain privileges in the public interest which are not extended to all customers. On the other hand, incentive arrangements in contracts cannot have the most beneficial results for both parties unless the contractor can have a quick-reaction freedom to make trade-off decisions. The controls and prior approvals now in the ASPR and NASA Procurement Regulation were originally devised to fit a different type of contract and

for use in a different procurement environment, and it may be possible to devise less elaborate and restrictive procedures under which the essential controls could be retained by Government while permitting the managerial flexibility which the contractors desire and need. Any reasonable proposal along these lines should be carefully considered by NASA in coordination with other Government agencies concerned.

3. Follow-Up Action

Industry will explore the possibility of submitting specific suggestions for tailoring essential contract controls to the operational requirements of the contract incentives.

F. Arrangements for an Effective Exchange Between Government and Industry of Experience Relative to Incentive Contracts

1. Discussion

The discussion of this item pointed up that there is comparatively little experience in industry and NASA regarding the results of the use of incentive contracts. The need for such an exchange of information was recognized as being of mutual benefit to both industry and Government.

2. Conclusion

It was agreed that industry would cooperate with NASA in the development and identification of areas in which information regarding the performance of incentive contracts and the results thereof would be exchanged between industry and NASA. Further discussions between NASA and industry will be held for this purpose.

3. Follow-Up Action

Industry representatives will work with representatives of NASA in the delineation of areas in which information relative to incentive contracts will be exchanged and in the establishment of arrangements for the regular accumulation and exchange of such information. It is recognized that any exchange must respect proprietary information and data considered sensitive by contractor management.

PROPULSION

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RECORD OF PROCEEDINGS

The Propulsion Workshop convened at 9:30 a.m. in Capital Suite "B", the Mayflower Hotel, Washington, D. C. on June 23, 1964 and adjourned at 3:30 p.m. the same day. Mr. George S. Garrard served as moderator and also recorded the proceedings.

REPORT

A. NASA Central Index of Specifications

This deals with specifications and other contractual requirements documents in use by NASA Centers and how they can be listed under one central index for reference use by both NASA and industry.

1. Discussion

The moderator introduced Mr. R. E. Craig who presented examples of conflicting requirements of specifications issued by NASA Centers along with steps taken by his company to reconcile these conflicts in the execution of contracts.

A number of the problems result from specifications written to control plant processes to a degree or extent not previously experienced by the propulsion industry. This greater degree of control is being applied to processes not new or unfamiliar. They frequently include engineering or design restraints. The same thing may be said for the engineering disciplines which fall under the generalized headings of maintainability, human engineering, safety, reliability and value engineering.

The propulsion contractor with more than one customer, or who is privileged to do business with more than one NASA Center, lives with the problem of different specification requirements for the same process or engineering, by seeking deviations.

It is impossible to train a plant technician to achieve different levels or grades of process control on an interchangeable basis.

To alleviate this situation, it was recommended that consideration be given to the establishment of a centralized NASA Indexing System Function. Such an indexing system function as recommended would:

a. Provide contractors with a list of acceptable documents to be searched for the best applicable. This should also aid NASA Centers. Engineers, particularly at the design level, need a source of acceptable specifications.

b. Make immediately apparent, duplicity of product peculiar specifications, particularly at the process control level. Program management documents in the same category would show up. The result would be consolidating action.

c. Provide for reiteration or feed-back from contractors of those improvements originating either at NASA contractors or NASA Centers. Improvements resulting from application experience would not be lost--but considered.

d. Need to be date-controlled with the particular specifications listed to show the latest coordinated revision and/or acceptable specification released for use. This would require regular periodic reviews.

In summarizing this discussion, Mr. Craig listed improved schedules, reduced costs, better communications, elimination of "frills," better specifications and a central agency through which recommended changes could be funneled, as benefits which would be derived by both NASA and industry if an index of NASA specifications or contractual requirements documents were to be compiled, consolidated, and maintained at an up-to-date level of current titles and revision dates. The contractors and NASA have a singleness of purpose: that of desiring to reduce costs, improve schedules, and obtain better hardware.

Mr. Tischler noted that NASA has recognized this as a problem. As a framework for one approach to the problem, Mr. Rhode of NASA has been developing design criteria in several areas.

Comments by Mr. Rhode indicated some doubt that a specification index, such as had been discussed, could be construed as a part of his activity in preparing design criteria documents. However, he has utilized the efforts of a NASA Steering Committee to analyze the cause of failures in Atlas boosters and of structural elements of the Centaur. Out of this is expected to be generated design criteria which will reflect state-of-the-art knowledge to avoid improper application of available data.

Mr. Rhode feels that many of the older, more experienced design engineers are now in administrative positions, and that the younger engineers and physicists, in some instances, have failed to utilize technical knowledge which is in existence. In the work being accomplished, design problems will be defined and mean intelligences will be made available, aimed at prevention of failures. There will be one document for each problem area. Young engineers will be provided a summary of current state-of-the-art criteria, including acceptable practices. Specific recommendations will be made, which will be within their capabilities of understanding.

Mr. Rhode requested that any additional design problems be brought to his attention for assessment as to the need for educational material. Along with any outline of problems, he desires to know which groups of people might be more knowledgeable, i.e., industry, universities, or research organizations. On the distribution list for the material being prepared by his group, he will include chief engineers or vice presidents of engineering of the major companies. There will be a special letter of introduction prior to dissemination of the first publications. Copies will be furnished for distribution to the Propulsion Technical Committee and the Aerospace Research and Testing Committee.

It was recalled that the former AIA Rocket Technical Committee had compiled design criteria for liquid propellant rocket engines in 1954-55, later submitted to the military services with a recommendation that it be made guidance material for the use of designers. This was subsequently released by the Aeronautical Standards Group as an ANA Bulletin No. 428 under the title "Engines, Rocket, Liquid Propellant, Design and Installation Criteria for." A copy of Bulletin No. 428 will be sent to Mr. Rhode. A suggestion is to be made to the rocket manufacturers presently represented on the Propulsion Working Committee, that the Bulletin be reviewed with consideration given to bringing it up to date.

In summarizing discussions, there was a consensus among all participants that a specification problem does exist. However, no suggestions had been made for solving the problem nor of implementing a program which would eventually provide relief. The

question was raised as to what problems NASA would expect to encounter in implementing such a program, and what industry might do to assist in the implementation.

Mr. Tischler stated that a direct answer to these questions was most difficult. In his propulsion group, the staff is not large enough to take on any extra assignments over and above what they are now called upon to perform. The same situation exists in most NASA Centers. He stated that unless the problem is recognized at a high level in NASA Headquarters, relief will be very difficult. However, it would be a very worthwhile effort and something which should be done as soon as possible.

Basic NASA specifications are military specifications, with deviations or additional requirements written into the documents by NASA Centers dealing with specific applications. NASA is gradually getting away from the previous "arsenal concept" of detailed process specifications used in some Centers, by recognizing industry capabilities.

As a recommendation to be drafted for NASA management consideration it was suggested that consideration be given to the establishment of a group to:

a. compile an index of all NASA specifications or requirements documents called out in contracts;

b. review the list with the objective of eliminating such documents as are duplicative or overlapping in nature;

c. determine which documents should be specifications and which should be guides or manual material (vendors do not have technical capacility of making design decisions);

d. Compare the NASA index list with the DOD index, with further eliminations.

The Marshall Space Flight Center index, although not up to date, might be used as the nucleus for the new NASA index. Mr. Brown indicated that Marshall might also be able to supply a few people to assist in the program.

In considering what industry might do to assist in this effort, industry participants in the workshop indicated that they could be most helpful in the review of content of the documents, once they have been listed.

2. Conclusions

A problem does exist. Organized efforts to solve the problem would be worthwhile. However, relief will be slow in coming unless adequate emphasis is directed by higher authority.

3. Follow-Up Action

NASA management is to be advised of the problem and their concurrence solicited in this workshop's conclusion that maximum benefits would be derived through establishment of a coordinating group to carry out the Central Indexing System Function.

B. Management of Contractual Data

This concerns consideration of cost savings which can accrue through better management and control of data required on contracts.

1. Discussion

Mr. G. N. Cole who spoke for the industry participants on this subject, that data acquisition from the viewpoints of companies is not necessarily uniform.

The Data Management Manual AFLCM/AFSCM 310-1 may be viewed as an effort to establish a least common denominator of requirements for data. Form 1423, which will list all of the data needed on a contract, will be a part of the schedule of the contract. Although 310-1 may be considered a step in the right direction, it appears then experience probably will necessitate important modifications. Since the use of computers and all forms of electronic data processing may be expected to increase in the next few years, a rapid change may be expected in how data is compiled and furnished. A good philosophy is needed for the development of kinds and types of data needed. There is also a need to introduce appropriate data at the right time.

Mr. Tischler said the Government needs data to be accessible when needed, and that the Government should be satisfied with this availability rather than accumulate masses of paper which sometimes cannot be reviewed, nor even properly filed.

Mr. Fred Frank, of the AIA Technical Service Staff, made a presentation with respect to the Air Force Configuration Control document AFSCM 375-1. This is closely interrelated to 310-1 in concept. If NASA contemplates the use of similar procedures, it was recommended that recognition be given to comments developed by industry on 375-1, which are presently in process of being incorporated into the Air Force manual.

Mr. Tischler noted that there is a need for standardized data, but minimum requirements in this regard should be the objective. Periodic reviews during the life of a contract should be held with NASA and contractors participating, to eliminate non-essential data. In Mr. Webb's address, he had stressed the need for a better planning job by both Government and industry. This involves more than establishing technical feasibility. There is need for a standardized program profile—a better definition of what is to be accomplished to get a better evaluation by both Government and industry.

2. Conclusion

Periodic reviews of data required on contracts, during the life of such contracts, will serve to eliminate the submittal of non-essential data.

GENERAL COMMENTS

At the conclusion of the agenda discussions, NASA participants were questioned as to areas in which improvements could be made by industry, or where industry could assist NASA in any of their problem areas.

One item of note presented by NASA had to do with requirements imposed by prime or associate contractors on subcontractors. NASA feels that requirements imposed on subcontractors by their primes are often more severe and detailed than those imposed by NASA. There is room for considerable improvement in the area of prime-subcontractor relationships.

On the industry side, it was recommended that technical requirements and performance all be stated in the rocket engine model specification, not scattered throughout several different documents. Attention was called to a specialized group from the rocket engine manufacturers, formed at the request of the Air Force Rocket Propulsion Laboratory, which had met several times to prepare a proposed revision to the liquid propellant rocket engine specifications. These eventually will be coordinated between the military services, NASA and industry. Inasmuch as drafts of these proposed revisions have not been made available to NASA by the Air Force, Messrs. Tischler and Brown will be sent copies by AIA.

In conclusion, Mr. Tischler stated that, for future requirements, NASA is attempting to be realistic, without "gold-plating." Additional workshops of this kind will further aid in establishing a better understanding of common problems and improve the relationship between NASA and its contractors.

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RECORD OF PROCEEDINGS

The Subcontract Management Workshop convened at 9:40 a.m. in the Jefferson Room, the Mayflower Hotel, Washington, D. C. on June 23, 1964 and adjourned at 4:30 p.m. the same day. Dr. Carl Schreiber served as moderator and the proceedings were recorded by Mr. S. D. Daniels.

REPORT

A. Uniform Subcontract Management

This concerns the relationship of NASA Centers and contractors in the area of subcontract management, with particular emphasis on the variations in the practices of the several centers.

1. Discussion

Two lines of interest were developed: terms and conditions of subcontracts; and traceability or identification requirements. Examples cited revealed differing views between NASA and industry as to the NASA role in review of subcontracts. Industry was of the opinion that, at this stage, the NASA role should be one of a business determination as to whether or not this was a good procurement. NASA on the other hand felt a responsibility for compliance with statutory requirements, even if it means getting into the details of the "boiler plate" in terms and conditions of subcontracts. On the second item, traceability, industry suggested a reasonable limit be placed on how far back into the history of a component, part, or subsystem, its identity needed to be traceable. Based on their experience with a lack of uniformity in reliability of all suppliers, NASA could not agree that uniformity was essential in the application of traceability requirements. Industry also cited a problem with unwarranted delays in getting conditional approval of subcontracts where so-called "typo errors" were involved. In the direction of better uniformity, NASA indicated they are working with DOD in expanding participation in purchasing system surveys.

2. Conclusion

Based on the discussion it was concluded that a further look into the possible inconsistencies and redundancy of NASA requirements with prime terms and conditions were warranted.

3. Follow-Up Action

Industry agreed to document the conclusion stated above with specifics for NASA's consideration. NASA also agreed to issue instructions to the centers for the conditional approval of subcontracts which involve only "typo errors."

B. Coordination Between Technical and Procurement Administration at NASA Centers

1. Discussion

NASA technical direction at the subcontract level was discussed but no conclusions reached since the subject was being considered in another workshop. (See conclusions of the Technical Direction Workshop.)

C. Competition in Selection of Subcontractors

1. Discussion

According to NASA, prime contractors too frequently seek subcontract competition with insufficient documentation. Adequate documentation for competition follows engineering development. When in NASA's judgment there is only one qualified subcontractor, industry feels NASA should direct procurement.

2. Conclusion

There was a concensus on the need for better documentation in subcontract competition.

D. Level of NASA Approval for Subcontracts

1. Discussion

With thousands of active contracts the Centers, having limited manpower, are not in a position to review all subcontracts and must delegate authority. Normally NASA will accept the contractor's purchasing system at the same dollar level of approval as DOD. The Centers varied in their practices as to minimum level for local approval and center approval. Secondary delegation of approval to DOD is contingent upon NASA evaluation of DOD capability and organization in terms of NASA needs.

NASA asked for industry practice as to authority for subcontract approval levels. Levels reported were in the following ranges:

Buyer:	$ 1,000	-	$ 25,000
Purchasing Agent:	$ 5,000	-	$ 100,000
Director of Materiel:	$50,000	-	$1,000,000

NASA is looking toward systems review rather than individual transaction review; a business oriented review by spot check or surveillance, and a technically oriented review prior to placement of contract.

E. Subcontract Administration by Prime Contractors

1. Discussion

The extent of a prime's administration over subcontracts is a management judgment based on a prime's confidence in the subcontractor. It is inadvisable to generalize in this regard. Sufficient attention is given to insure performance and delivery of hardware. Sub's internal reports are preferred to compliance with prime's reporting requirements. Interest in subcontractor reporting is in seeking an objective management of schedule, quality and cost. The project manager's tools in this regard are periodic detailed progress and financial reports plus daily exception reporting (problem area with solution reports).

2. Follow-Up Action

NASA agreed to investigate the requirement of NPC 200-2 which requires quality control to sign off on all purchase orders. NASA also agreed to determine the intended limit of application for the quality control manual's requirement for an inventory plan and procedure to prevent co-mingling of parts.

F. Subcontractor Right of Appeal to NASA Board of Appeals

1. Discussion

The question was asked by NASA as to industry opinion on whether a subcontractor should have right of appeal to NASA Board of Appeals, or whether this should only be done on his behalf by the prime.

2. Conclusion

Industry was unanimous in its opinion that subcontractors should have no right of appeal except through the prime contractor. NASA will follow ASPR dispute provisions in subcontracts (3-903.5). NASA sees no reason for the Government to insert itself here in the contractor-sub relationship.

G. Make-or-Buy Policy

1. Discussion

The new NASA regulation is similar to the ASPR except for R&D contracts.

2. Conclusion

There was general agreement on the limitation of make-or-buy to major and/or important items dealing with cost and technical ramifications.

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RECORD OF PROCEEDINGS

The Technical Direction Workshop convened at 9:30 a.m. in the Cabinet Room, the Mayflower Hotel, Washington, D. C. on June 23, 1964 and adjourned at 4:30 p.m. the same day. Mr. C. R. Lowry served as moderator and the proceedings were recorded by Mr. H. H. Rachlin.

REPORT

A. Background Presentation

The NASA Headquarters Project Officer, Mr. W. C. Unkenholz, opened the workshop by making a brief presentation on the background of a project to develop NASA-wide policy on the subject of technical direction. He related that a proposed policy paper had been developed but had not as yet been coordinated with NASA field installations or all interested offices in NASA Headquarters. The purpose of the discussion was to exchange opinions between representatives from NASA Headquarters, industry and NASA centers on salient points to be covered in the policy paper.

In further establishing the background, Mr. Unkenholz stated the proposed policy was predicated on the premises that there is a need for technical direction in the procurement operations of NASA because of its R&D orientation; and that emphasis would be made in the policy that the full impact of a technical directive on contract performance, contract cost and contract provisions must be assessed prior to its issuance. With this background, the meeting moved into the following agenda items.

B. What Technical Direction Covers

1. Discussion

Mr. Unkenholz presented the following suggested definition of Technical Direction: "Authoritative instructions within the scope of a contract issued by NASA to a contractor for the purpose of: (a) filling in previously unspecified details of the technical requirement; (b) redirecting the contract effort, shifting work emphasis between work areas or tasks, or requiring the pursuit of certain approaches or lines of inquiry; (c) providing approval of technical reports, drawings, specifications and other technical information; (d) providing guidance, advice, definitions, and other information which assists in the interpretation of drawings, specifications, or other technical portions of the work description." Using this as a starting point, a lengthy discussion followed with all participants relating their experience in endeavoring to arrive at a mutually acceptable definition.

2. Conclusion

Agreement was not reached by the panel on a completely acceptable definition. However, both industry and NASA representatives agreed that a workable definition of "Technical Direction" is most desirable and that further effort should be made to arrive at an acceptable definition. Industry representatives felt that the definition, especially in the areas of (a) and (b) was too broad and subject to misinterpretation by those responsible for implementing.

3. Follow-Up Action

Industry representatives offered to work closely with NASA on an "as required" basis, considering the several steps of internal NASA coordination yet to be made, to ensure publication of a fully coordinated definition of Technical Direction.

C. The Effect of Technical Direction on Contract Cost

1. Discussion

There seemed to be general agreement by NASA and industry representatives that technical directives should not be issued if it can be reasonably expected that such direction will affect contract costs. Industry representatives pointed out a number of examples where technical direction had in fact affected not only cost but also delivery and performance. NASA opinion was that if a contractor felt that a technical directive would affect contract costs, performance or delivery he should notify the Contracting

Officer and the Contracting Officer could either rescind the technical directive or issue a change order under which an equitable adjustment would be negotiated.

The points were then made that it is not always possible early in the contract period to determine the impact that a particular technical directive will have on costs later on in the contract period, and recourse of the contractor is not clear in event of disagreement on whether a technical directive should be rescinded and re-issued as a change order.

2. Conclusion

Accord was generally reached on these points: (a) only those technical directives which very clearly do not affect contract costs should be issued as technical directives and the balance should be issued by the Contracting Officer as change orders to the contract; (b) there appeared to be a need for a clarification of the NASA position on the effect of technical directives on contract costs to specify if reference was being made only to the immediate measurable effects and how possible long-term effects should be treated; (c) recourse of the contractor in the event of disagreement on whether a technical directive impacts contract provisions should be clearly stated.

D. Technical Direction and Fee

1. Discussion

The discussion centered around the influence that the definition of "technical direction" would have on whether or not fee would be affected by technical directives. NASA members unanimously agreed that since a technical directive must be an issuance within the scope of the contract and without impact on contract provisions, including stated technical, schedule, cost or incentive provisions, it cannot carry a fee. From an industry viewpoint, this emphasized the need for a positive, concise definition of a technical directive.

2. Conclusion

It was agreed that if the definition is made such that a technical directive must be an issuance within the scope of the contract and will in fact not have impact on contract provisions, including stated technical, schedule, cost, or incentive provisions, it should not carry a fee.

E. Contractual Impact of Technical Direction

1. Discussion

This agenda item basically centered around three matters: the need for a technical direction clause in the contract; the form of technical directives; and the use of change in orders in lieu of technical directives.

It was industry opinion that if technical directives receive full coordination within NASA prior to issuance to determine whether there is or is not contract provision impact and if technical directives are countersigned by the Contracting Officer, then actually the mechanics of issuing a technical directive would be no less expedient than issuing a change order to the contract. If contract change orders are issued, implementation can be immediate and if there is a contract impact, the contractor can notify the Contracting Officer and negotiate an equitable adjustment at a later date. If there is no contract impact, the contractor would advise the Contracting Officer that the change order would be incorporated with no effect upon cost, delivery or performance. An additional benefit is the already established procedures for issuing changes within both the NASA procurement organizations and the contractor's organization.

It was NASA's opinion that the issuance of technical directives as change orders by the Contracting Officer would not be particularly objectionable at NASA installations where the volume of such directives was expected to be small. The procedure would be considered less desirable in the case of a large volume of technical directives and, since the basic responsibility for the success of a project lies in the last analysis with NASA, the need for technical direction contract clauses is considered a valid one. Also, it was stated that the proposed NASA instruction recognizes the varying need for such clauses and makes their use permissive and, if a NASA installation can accomplish its mission without issuing technical directives, it will not be required to use such clauses.

2. Conclusion

It was agreed by all that technical directives should be in writing and should not be issued by anyone other than the responsible project manager. This will require the responsible project manager to consider all aspects of a proposed technical directive, business as well as technical, thereby emphasizing over-all management rather than just technical direction on the project. There was not complete agreement on the use of the change clause vs. the technical directive. All parties were in accord that a single NASA-wide policy on technical directives should be issued.

F. Technical Direction in Incentive Contracts

1. Discussion

It was the NASA position that while the type of contract does not determine the need for a technical direction contract clause, it may vary the extent of that need. In order to include meaningful incentives in a contract, the scope of work needs to be well-defined. As this definition increases, the need for technical directives should decrease. Technical directives may not affect the incentive provisions of a contract.

NASA stated it is considering the use of phased procurements in the accomplishment of major new development projects. This would involve the use of study contracts during the initial stages to achieve project definition. There would then be an evolution of increasingly definitive specifications in successive stages of the project, leading to an incentive contract in the hardware procurement stage.

Industry was of the opinion that technical direction conflicts with the purpose of incentive contracts. Specifically, if the criteria for incentive contracts are followed then there should be sufficient definition in the contract provisions, including specifications and technical plan, to permit establishing meaningful targets which are reasonably measurable. It would then seem that the need for technical direction is considerably minimized if not eliminated and it would appear completely feasible to rely upon the changes clause to implement any technical direction. In this manner the contractor would be sufficiently alerted to the change being made in his contract and would have an opportunity to evaluate thoroughly the impact of any change or direction on the complex incentive formulas normally contained in CPIF contracts.

2. Conclusion

All representatives agreed with the diminished need for technical direction as the program progresses from the study and research phase through development and initial hardware phase.

3. Follow-Up Action

It was agreed that the subject of phased procurements is worthy of future consideration by a similar NASA-industry group.

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RECORD OF PROCEEDINGS

The Traffic Management Workshop convened at 9:30 a.m. in the Columbia Room, the Mayflower Hotel, Washington, D. C. on June 23, 1964, and adjourned at 4:00 p.m. the same day. Mr. Allen J. O'Brien served as moderator and the proceedings were recorded by Mrs. Aileen Andrews.

REPORT

A. NASA Transportation Organization

1. Discussion

Mr. McCollom reviewed the mission and organization of the NASA Headquarters transportation organization and its relationship to the transportation organizations of the various NASA Centers. Headquarters NASA has staff responsibility. Operational responsibility is vested in the Centers. As the contractual relationship between NASA and industry is exercised through the Centers, management of traffic and transportation is largely decentralized. The Headquarters mission is primarily planning. Headquarters is also responsible for providing effective direction to the Centers. Mr. McCollom expressed recognition of the fact that the traffic organizations of the Centers differ with respect to the degree of "control" exercised over the traffic management determinations of industry. The differences, however, are often manifestations of the terms and conditions negotiated into contracts.

2. Conclusion

Mr. McCollom voiced appreciation of the opportunity afforded by the workshop to meet with industry traffic managers. He expressed the desire to continue the relationship so as to provide a means for effectively working together in the public interest.

B. Transportation Equipment Design and Utilization

1. Discussion

Workshop participants considered the merit of establishing a central repository of information—a coordinating point—which would contain the description, availability, or proposed planning for vehicles capable of transporting articles of extreme dimension or weight. It was pointed out that private industry, as well as the Government, generates requirements for water, air and land transporters capable of handling large articles which exceed maximum railroad car and roadbed capacities. These requirements are not limited to the military and space programs but exist in numerous industrial fields such as large generators, atomic reactors, construction equipment, etc. There is, however, no effective means by which a potential user of such specially designed transportation equipment can determine the availability of existing equipment capable of satisfying his requirements, either with or without modifications. Establishment of a central repository or inventory of available equipment would contribute to better utilization of existing equipment by permitting one user to rent the existing equipment of another user rather than to independently design a somewhat similar type of transporter. In most cases, these specially designed transporters are infrequently employed and thus would be available for use by others if their existence were known. Discussion was also directed to the possibility of employing such a central repository as a coordinator of planning for the design and construction of such transporters. In this way a determination could be made at the outset whether a particular article of transportation equipment could be modified in the initial stages so as to also accommodate the requirements of other potential users.

2. Conclusion

NASA and industry participants concluded that there was sufficient merit in this suggestion to justify further exploration. Accordingly, Mr. McCollom and Mr. O'Brien agreed to discuss the subject further and to determine the interest of other agencies in going forward with a program to establish a central coordinating point or repository of information.

C. NASA Traffic Control Policies and Government Bill of Lading Procedures

1. Discussion

Under the NASA decentralization program the traffic organizations of the Centers do not follow a standard Headquarters-established procedure governing the issuance of GBL's to contractors. The Centers do not follow a uniform procedure with respect to routing and consolidation of shipments by contractors and the use of parcel post mailing indicia (franking privilege). Industry participants stated that the absence of standard programs does not present any particular problems. NASA participants emphasized the point that they were trying to eliminate all unnecessary paperwork and called upon industry to advise them when paperwork becomes a burden. Mr. McCollom observed that NASA is not adverse to the use of mailing indicia but does find that parcel post is unsatisfactory for the transportation of premium materiel in view of the fact that there is no effective means for tracing or otherwise maintaining effective control in transit of parcel post shipments. NASA also requested the cooperation of industrial traffic organizations in its cost savings program. Industry participants assured NASA of their cooperation. NASA participants also requested that industry feel free to suggest improvements to the NASA traffic management program. On behalf of the AIA participants in the workshop, Mr. O'Brien invited NASA traffic personnel to attend meetings of the AIA Traffic Committees so that subjects of mutual interest and concern could be considered and resolved.

2. Conclusion

Mr. O'Brien and Mr. McCollom will accomplish necessary liaison to follow up on the Cost Savings Program; and arrange for discussions between NASA traffic and

transportation elements and AIA Traffic Committees on matters of mutual interest where such consideration will improve the effectiveness of Joint NASA-industry programs.

D. Export-Import Regulations and Procedures

1. Discussion

Industry participants commented on past experiences concerning their inability to import NASA materiel on a "duty-free" basis. NASA participants pointed out that there is no provision in the law which will permit NASA to import materiel duty-free. All participants agreed that this is a minor problem in view of the fact that a very limited quantity of NASA materiel is being imported. Industry participants suggested, however, that NASA give consideration to obtaining provisions similar to those which control military imports in view of the fact that this may present problems in the future.

2. Conclusion

Mr. McCollom suggested that unless the problem grew substantially, no action be taken to obtain exemptions from Customs duty on NASA imports.

E. Packaging Policies and Procedures

1. Discussion

Industry participants voiced the need for a NASA Headquarters statement of policy which will assure incorporation in contracts of adequate, meaningful and definitive packaging specifications. Mr. McCollom stated that the National Security Industrial Association has approached NASA on this subject. He expects to receive a recommendation from NSIA within the next sixty days. He requested the AIA Packaging and Preservation Committee to provide him with a paper setting forth the need for action in this area and recommended solutions.

2. Conclusion

The AIA Packaging and Preservation Committee will provide Mr. McCollom with written suggestions and comments for action in this area.

F. Development of Freight Classification Guide for Aerospace Components

1. Discussion

Consideration was given to the compilation of a publication to contain freight classification descriptions and item numbers for NASA type materiel. Among several approaches considered was the transmission of classification determinations by contractors to some central point where the information thus received would be collated and consolidated in a single publication. Considered also was the possibility of securing a break-out of NASA items by the Defense Traffic Management Service. Participants agreed that the latter approach would be more economical and practical if the information is available within DTMS as a by-product of its activity in connection with the Federal Cataloging Agency.

2. Conclusion

AIA will join with NASA in exploring this subject with the Defense Traffic Management Service.

G. Transportation of Small Shipments of Explosives

1. Discussion

Workshop participants reviewed their common problems in connection with the transportation of small lots of explosives via common carriers. NASA representatives indicated that their problems have been aggravated due to the discontinuance of an ICC exemption which heretofore permitted shipments of certain categories of explosives to be transported by REA Express. Of particular concern to both NASA and industry is the lack of availability of single motor carrier service plus the inordinately high charges being assessed for existing motor carrier service. Both NASA and individual AIA member companies have communicated with the ICC and expressed support of a motor carrier applicant which proposes to provide a service for small lots of explosives at reasonable rates. A representative of the applicant was present to advise workshop participants of the status of that proceeding. He indicated that a decision will be handed down by the ICC in the near future.

2. Conclusion

No additional action is required in connection with this subject at the present time.

H. Transportation of Oversize and Overweight Shipments

1. Discussion

Comments of workshop participants were directed to the various problems related to securing waivers from state governments which will permit the movement of articles of extreme dimension and weight over state highways. NASA has obtained some relief by availing itself of procedures established by the military departments in cooperation with the state governments permitting waivers to be granted for shipments considered essential to national defense. Although the movement of NASA shipments can qualify as being essential to national defense, the question arises as to whether or not arrangements with states for the movement of NASA materiel could not be handled more effectively if shipments were to be clearly identified with the space program. Considered also was the fact that NASA shipments very often require weekend movements and state authorities are hesitant to grant waivers for application on Saturdays and Sundays. Industry participants observed that in some cases states have little information concerning NASA and its needs. A suggestion was made that NASA explore the possibility of establishing its own procedure with the states, working through the Council of State Governors. All participants expressed the opinion that they are not now faced with insurmountable problems.

2. Conclusion

Mr. McCollom suggested that no further action be taken on this matter at this time unless industry comes up with a definable dilemma.

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